

Dr. Yoann Coquerel, PhD

Research Director (class 2) at CNRS (Section 14)

50 years old

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Institut des Sciences Moléculaires de Marseille

iSm2 – UMR 7313, équipe stereO

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A chemist with a passion for stereoselective organic synthesis and physical chemistry

After university training (1993–1998), a PhD (2001), and two postdoctoral positions in the field of total synthesis of biologically active natural products, I was recruited as a CNRS Research Scientist (2003) in the group of Prof. J. Rodriguez at Aix-Marseille University. Thus, from 2003 to 2016 within the stereO team of the iSm2, I actively contributed to the methodological development of cascade reactions and enantioselective organocatalysis involving carbonyl compounds.

I have been promoted as CNRS Research Director in 2015, and since 2016, still within the stereO team of the iSm2, I have been developing independent scientific research on the synthesis and molecular properties of chiral polycyclic aromatic hydrocarbons. My scientific interests include: the stereoselective synthesis of chiral polycyclic aromatic hydrocarbons (PAHs) and their (chir)optical properties; applications in stereoselective synthesis of aryne reactivity, most often under catalytic conditions (transition metals); the study of reaction mechanisms through both experimental and theoretical approaches; the duality between steric congestion (repulsive forces) and London dispersion (attractive forces) in the synthesis and properties of highly crowded organic molecules; the challenges of isotopic chirality in synthesis and analysis; and the theory and analysis of aromaticity in chiral π -conjugated organic molecules.

Degrees and Professional Experience

2015 : Research Director (class 2) at CNRS (section 14, ex 12)

2009 : Habilitation, Aix Marseille University

2007 : CNRS Research Scientist (class 1) (section 14, ex 12)

2003 : CNRS Research Scientist (class 2) (section 14, ex 12)

2002 – 2003 : Temporary Teaching and Research Associate, University Grenoble Alpes

2001 – 2002 : Post-doctoral research associate, Florida State University (USA)

2001 : PhD in Chemistry, University Grenoble Alpes

1996 – 1998 : Master's degree (equivalent to MSc) in Chemistry, University Grenoble Alpes

1993 – 1996 : Bachelor's degree equivalent (Licence) in Chemistry, University Bourgogne–Europe

Awards

2024 – 2026 : CNRS scientific excellence award

2014 : Junior Distinguished Member of the French Chemical Society

2014 – 2017 : CNRS scientific excellence award

2010 – 2013 : CNRS scientific excellence award

2002 : PhD Thesis Award from the Organic Chemistry Division of the French Chemical Society

Institutional responsibilities

Since 2021 : Elected President of the Sud-PACA regional office of the French Chemical Society

2017 – 2021 : Elected Member of the Sud-PACA regional office of the French Chemical Society

Since 2015 : Member of the scientific committee of the Fédération des Sciences Chimiques de Marseille

2008 – 2012 : Elected Member of the iSm2 Laboratory Council

2004 – 2021 : local correspondent for the Chimiothèque Nationale

Significant grants (> 200 k€)

2024 – ANR-PRC STRAINOGRAPH (participant)

2019 – ANR-PRC TWISTAR (coordinator)

2017 – REGION PACA EMERVIR (participant)

2007 – ANR SYNTHÉCO (participant)
2013 – ANR-JCJC STUADORCA (coordinator)
2009 – FUI VIRAZAL2 (participant)

Supervision and participation in PhD thesis and Habilitation juries

- PhD supervisor or co-supervisor: 11 students (1 on going)
- Host or co-host for post-doctoral research associates: 10 collaborators
- participations in PhD and Habilitation juries: 26 and 5, respectively

Selected recent publications

[Water-Mediated 1,7-Palladium Aryl-to-Aryl Migration in an Unusual Aryne Trimerization Enables the Synthesis of Multihelicenes with Profoundly Hindered Stereogenic Axes.](#) A. Artigas, M. A. Ortuño, J. Castro-Esteban, M. Giorgi, D., Peña*, D. Pérez*, Y. Coquerel* *Adv. Synth. Catal.* **2025**, 367, e202500338.

[Ground and Excited State Aromaticity in Azulene-Based Helicenes.](#) A. Lorenzo Reyes,* F. Ndeye Ndiaye, A. Artigas, Y. Coquerel, C. Terrioux, N. Prcovic, D. Hagebaum-Reignier*, Y. Carissan* *ChemPhysChem* **2025**, 26, e202400833.

[Controllable 1,4-Palladium Aryl to Aryl Migration in Fused Systems Application to the Synthesis of Azaborole Multihelicenes.](#) F. Full, A. Artigas, K. Wiegand, D. Volland, K. Szkodzińska, Y. Coquerel, A. Nowak-Król* *J. Am. Chem. Soc.* **2024**, 146, 29245–29254.

[Aromaticity in semi-condensed figure-eight molecules.](#) A. Artigas, Y. Carissan, D. Hagebaum-Reignier, H. Bock, F. Durola*, Y. Coquerel* *Chem. Eur. J.* **2024**, e202401016.

[Helicene Aromaticity Deviates from the Clar Rule - On the Electronic Dissimilarity of Large Isomeric Fibonacenes.](#) L. Sturm, A. Artigas*, Y. Coquerel*, I. H. Bechtold, F. Durola, H. Bock* *Angew. Chem. Int. Ed.* **2024**, e202403170.

[Conformational, Structural, and Chiroptical Properties of an Overcrowded Triply Fused Carbo\[7\]helicene.](#) A. Artigas, N. Ferdi, M. Rémond, F. Rigoulet, N. Vanthuyne, D. Hagebaum-Reignier, Y. Carissan, J.-V. Naubron, M. Giorgi, L. Favereau*, Y. Coquerel* *J. Org. Chem.* **2024**, 89, 498–504.

[Oxidation of a triple carbo\[5\]helicene with hypervalent iodine.](#) F. Rigoulet, A. Artigas, N. Ferdi, M. Giorgi, Y. Coquerel* *Org. Chem. Front.* **2023**, 10, 5902–5907.

[Overcrowded Triply Fused Carbo\[7\]helicene.](#) A. Artigas*, F. Rigoulet, M. Giorgi, D. Hagebaum-Reignier, Y. Carissan, Y. Coquerel* *J. Am. Chem. Soc.* **2023**, 145, 15084–15087.

[A Triply \[5\]Helicene-Bridged \(1,3,5\)Cyclophane.](#) F. Aribot, A. Merle, P. Dechambenoit, H. Bock, A. Artigas, N. Vanthuyne, Y. Carissan, D. Hagebaum-Reignier, Y. Coquerel*, F. Durola* *Angew. Chem. Int. Ed.* **2023**, 62, e202304058.

[Enantiospecific Syntheses of Congested Atropisomers through Chiral Bis\(aryne\) Synthetic Equivalents.](#) G. Dauvergne, J.-V. Naubron, M. Giorgi, X. Bugaut, J. Rodriguez, Y. Carissan*, Y. Coquerel* *Chem. Eur. J.* **2022**, e202202473.

[Visualizing electron delocalization in contorted polycyclic aromatic hydrocarbons.](#) A. Artigas, D. Hagebaum-Reignier, Y. Carissan*, Y. Coquerel* *Chem. Sci.* **2021**, 12, 13092–13100.

[Enantiospecific Generation and Trapping Reactions of Aryne Atropisomers.](#) Y.-L. Wei, G. Dauvergne, J. Rodriguez*, Y. Coquerel* *J. Am. Chem. Soc.* **2020**, 142, 16921–16925.

[Stereoselective Syntheses, Structures, and Properties of Extremely Distorted Chiral Nanographenes Embedding Hextuple Helicenes.](#) M. Roy, V. Berezhnaia, M. Villa, N. Vanthuyne, M. Giorgi, J.-V. Naubron, S. Poyer, V. Monnier, L. Charles, Y. Carissan, D. Hagebaum-Reignier, J. Rodriguez, M. Gingras*, Y. Coquerel* *Angew. Chem. Int. Ed.* **2020**, 59, 3264–3271.

[Cyclobishelicenes: shape-persistent figure-eight aromatic molecules with promising chiroptical properties.](#) A. Robert, G. Naulet, H. Bock, N. Vanthuyne, M. Jean, M. Giorgi, Y. Carissan, C. Aroulanda, A. Scalabre, E. Pouget, F. Durola*, Y. Coquerel*, *Chem. Eur. J.* **2019**, 25, 14364–14369.

[Enantioselective Organocatalytic Four-Atom Ring Expansion of Cyclobutanones: Synthesis of Benzazocinones.](#) Y. Zhou, Y.-L. Wei, J. Rodriguez*, Y. Coquerel*, *Angew. Chem. Int. Ed.* **2019**, 58, 456–460.